Texas Rice

Texas A&M University System
Agricultural Research and Extension Center
Beaumont, Texas

May 2007 Volume VII Number 3

Cuban-American Relations: Going From Brick Walls to Open Doors

To fully understand current issues regarding trade with Cuba, it is helpful to understand the sequence of events that lead to our present dilemma. The recorded history of Cuba began in October of 1492, when Christopher Columbus sighted the island during his first voyage of discovery and claimed it for Spain. In 1868, Cuba declared it's independence from Spain, but it would be many years before that became a reality. In 1897, after years of rebel outbreaks against Spanish rule Spain moved to a more conciliatory policy, promising home rule with an elected legislature. The rebels rejected this offer, and the war for independence continued. Shortly afterwards, on 15 February 1898, the U.S. battleship Maine was mysteriously blown up in Havana harbor, killing 266 men. Forces in the U.S. favoring intervention in Cuba seized on this incident to accuse Spain of blowing up the ship (although Spain had no motive for doing so and there was no evidence of Spanish culpability). Swept along on a wave of nationalist sentiment, the U.S. Congress passed a resolution calling for intervention and President William McKinley was quick to comply.

Havana, the capitol of Cuba, is closer to Miami than Miami is to Tallahassee, the capitol of Florida.

The result was the Spanish-American War, in which U.S. forces landed in Cuba in June 1898 and quickly overcame the exhausted Spanish resistance. In August, a peace treaty was signed under which Spain agreed to withdraw from Cuba. Some advocates in the U.S. supported Cuban independence, while others argued for outright annexation. As a compromise, the McKinley administration placed Cuba under a 20-year U.S. treaty. The Cuban independence movement bitterly opposed this arrangement, but unlike the Philippines, where events had followed a similar course, there was no outbreak of armed resistance.

Theodore Roosevelt, who had fought in the Spanish-American War and had some sympathies with the independence movement, succeeded McKinley as President of the United States in 1901 and abandoned the 20-year treaty proposal. Instead, the Republic of Cuba gained formal independence on 20 May 1902, with the independence leader Tomás Estrada Palma becoming the country's first president. Under the new Cuban constitution, however, the U.S. retained the right to intervene in Cuban affairs and to supervise its finances and foreign relations. Under the Platt Amendment, Cuba also agreed to lease to the U.S. the naval base at Guantánamo Bay.

Many more years passed with outbreaks of rebel violence due, in part, to corruption in the government and low quality of living for the citizens. In January of 1959, Fidel Castro lead rebel forces in a successful takeover of the capital in Havana, and became Prime Minis-

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From the Editor...

Science and Politics

Welcome to the May issue of *Texas Rice*. A major goal of our editorial staff is to continue to strive to make *Texas Rice* the very best rice newsletter in the U.S. Currently, ca. 37,000 copies of *Texas Rice* are downloaded from the Beaumont Center website each year. Most of our readers are from the U.S., but a sizeable number are from other countries. While most of the research and special interest articles that we publish focus on rice research from U.S. research institutes, we occasional publish rice research articles based on research from other countries.

The beauty of scientific knowledge is that it knows no boundaries and, with only a few exceptions, it is immune to politics. A new scientific discovery, be it from Texas or China, has the potential to improve how we grow and produce rice. For example, the temperature sensitive male sterile gene that was originally discovered by Dr. Yuan in China is the basis for a major part of the hybrid rice breeding program in much of Asia and the U.S. Similarly, the semidwarf trait that dominates most of the U.S. long grain market was originally discovered in China, and made its way to the U.S. via the International Rice Research Institute in Los Banos, Philippines. Who would have thought that two of the most important advances to modern U.S. rice production would have come from other countries.

Each year, we try to find new ways to provide information about rice research and national/international rice news. Beginning with this issue, and from time-to-time throughout the year, we will include a "TRIA Update" column, which will provide an overview of the current status of the Texas Rice Improvement Association. TRIA is a non-profit organization that has been located at the Beaumont Center since the early 1940s. TRIA has changed quite a bit since its inception, but remains a viable and important partner, and continues to play an important role in insuring that varietal releases from our Center are of the highest possible quality.

Speaking of high quality, this past July, I had the pleasure of hiring Julio Castillo. Initially, Julio served as a Research Associate in my lab. One of the first experiments he worked on focused on determining the impact of soil moisture on rice seedling germination. Julio proved himself to be so valuable, that beginning this spring, he also took on the responsibility of overseeing the Center's Foundation Seed Program, which ties the Texas A&M and TRIA programs even closer together. If you have not met Julio, please drop by and see him the next time you are in Beaumont.

The lead article in this issue of *Texas Rice* was written by Jay Cockrell, and focuses on the history of the U.S.-Cuban discord and covers pending federal legislation aimed at normalizing trade relations between the two countries. A recent survey of the Cuban community in Miami, Florida suggests that a majority of young Cuban Americans favor normalization of relationships. What a change it would make were the virtual brick wall separating our countries to become an open door. Wouldn't it be great to see an open market from the U.S. to Cuba, as it has been estimated that Cuba would make up ca. 20% of U.S. long-grain exports. Opening the trades doors between our countries would be nothing but good news to U.S. rice producers. From major increases in acreage to upward movement of rice prices, Cuba could be the shot in the arm that the U.S. rice industry needs. Looking a bit more broadly, other aspects of the U.S. and Cuban economies would benefit as well. From telecommunication to tourism, this could be a real win-win partnership.

Please keep on sending us your suggestions.

Sincerely,

L. T. Wilson

L.T. Wilson
Professor and Center Director
Jack B. Wendt Endowed Chair
in Rice Research

Inside This Issue

Cover Story:
Cuban-American Relations

Farming Rice

a monthly guide for Texas growers

Providing useful and timely information to Texas rice growers, so they may increase productivity and profitability on their farms.

How No-till Rice Can Enhance Your Natural Resource Base

At the University of Arkansas, we have been researching no-till rice systems since 1999. Our findings have led us to challenge 'plow culture', which is underpinned by four basic beliefs.

1. Plowing is necessary to clear the field of surface residue, aerate the soil, and improve soil structure.

2. Burying surface residue suppresses plant diseases, insects, and weeds.

3. A clean plowed surface facilitates cultivation to level the ground, destroy weeds, and break up clods for a finely tilled seedbed.

4. Plowing and cultivation are the most cost-effective methods of controlling weeds and of preparing a proper plant bed for the row planter.

Our research has shown that successful no-till rice production requires a producer develop a mindset that will question, if not destroy, each of these basic beliefs. This makes the art of no-till production conceptually difficult and has hampered its wider adoption; particularly in rice. To overcome this barrier each 'plow culture' belief needs to be looked at in a framework of current production practices and possibilities.

1. Plowing is necessary to clear the field of surface residue, aerate the soil, and improve soil structure.

Photo depicts young rice seedlings emerging through a stale seed bed at one of the Arkansas test trials.

Planting through surface residue is not a problem given the equipment currently available. Our team have found that replacing standard closing wheels with spike closing wheels generally eliminates many of the problems encountered when planting into a wet seedbed. And while it is true that plowing aerates the soil, this only occurs in the layer that is disturbed. A better question is 'does the soil need aeration?' Aeration of the soil results in increased microbial activity. This leads to faster decomposition of organic matter; which is not a benefit. The soil structure is improved with organic matter, which is reduced by plowing, therefore soil structure is damaged by plowing not improved.

2. Burying surface residue suppresses plant diseases, insects, and weeds. Our team has found no body of research that has proven that burying surface residue suppresses plant diseases. At least for weeds, they are temporarily 'out of sight' but are not dead. Generally, burying weed seeds ensures they will be present in the future while stimulating germination of seed that are brought close to the soil surface. Residue remaining on the surface protects the soil surface from the impact of rainfall thus reduces erosion. Decaying residue contributes to soil health and nutrient levels. Good residue management is necessary in no-till production and is possible with the proper use of existing machinery and water. Combines should be equipped with 'shredder-spreaders' that shred residues and distribute them across an area equal to the width of the combine header, with the intent of not leaving a field with areas of high residue concentrations at the end of the season. These areas will impact the effectiveness of herbicides in the following season.

The Arkansas research team has found that the effectiveness of Command (Clomazone) is significantly reduced when crop residues remain on the field; this was not the case with Facet (quinclorac) or Newpath (imazethapyr). In our studies, the Arkansas Rice

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Agronomy team used Command at high rates, plus Facet, and have obtained acceptable weed control. Crop residue also helps the soil capture winter rainfall and enhance the decomposition of existing residue.

3. A clean plowed surface facilitates cultivation, field leveling, destroys weeds, and break up clods for a finely tilled seedbed. A clean plowed surface does facilitate cultivation, but is cultivation necessary given the herbicides available today and the costs involved with plowing and cultivation? Our research indicates that once labor is included in calculating costs, plowing and cultivation are not cost effective. If you do not plow you do not have clods. A finely tilled seedbed is not necessary with today's equipment. In many rice-producing soils a finely tilled seedbed results in crusting and a need to flush. In the Arkansas studies, we never flush no-till rice because it is not necessary.

4. Plowing and cultivation are the most cost-effective methods of controlling weeds and of preparing a proper plant bed for the tiller or row planter. While you might kill the weeds that have germinated, plowing results in more weeds germinating and buries any weed seeds that are on the soil surface, thus guaranteeing their survival. The costs of controlling weeds via chemicals and using a proper no-till planter to establish a crop are somewhat cheaper than conventional methods. There are additional savings from being able to get into a field sooner using no-till. Additional labor costs are associated with conventional-till farming due to fuel, labor and equipment.

Does no-till rice production enhance the farmers' natural resource base? Here are some of the Arkansas' team results:

Aggregate stability: Soil aggregates refer to small soil particles that are a combination of minerals, carbon, organic matter, and a host of organic and inorganic chemicals. The abundance of soil water stable aggregates is considered a measurement of soil quality as well as a physical property of the soil that can affect water absorption, aeration, and root penetration. Soils containing a higher percentage of water stable

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Table 1. Barnyard grass control at 2, 4, 8, and 16 weeks after planting (WAP).

Herbicide(s) Rate(s)	2 WAP		4 WAP		8 WAP		16 WAP	
	NO-TILL	TILLED	NO-TILL	TILLED	NO-TILL	TILLED	NO-TILL	TILLED
Command (clomazone) 0.45 kg ai/ha	95	100	90	98	74	91	74	96
Command (clomazone) 0.56 kg ai/ha	95	100	94	100	85	99	85	98
Prowl (pendimethalin) 1.12 kg ai/ha	0	0	65	93	0	80	0	88
Facet (quinclorac) 0.28 kg ai/ha	94	100	93	99	94	89	89	95
Facet (quinclorac) 0.42 kg ai/ha	99	100	99	100	91	89	88	100
Newpath (imazethapyr) 0.035 kg ai/ha fb* Newpath (imazethapyr) 0.035 kg ai/ha	100	95	100	100	100	100	100	100
LSD (p=0.05)	7		4		9		7	

*fb – followed by

Table 2. Broadloeaf signalgrass control at 2, 4, 8, and 16 weeks after planting (WAP).

Herbicide(s) Rate(s)	2 WAP		4 WAP		8 WAP		16 WAP	
	NO-TILL	TILLED	NO-TILL	TILLED	NO-TILL	TILLED	NO-TILL	TILLED
Command (clomazone) 0.45 kg ai/ha	97	100	74	99	78	90	71	93
Command (clomazone) 0.56 kg ai/ha	97	100	81	100	70	93	75	94
Prowl (pendimethalin) 1.12 kg ai/ha	0	0	45	78	0	45	0	63
Facet (quinclorac) 0.28 kg ai/ha	85	95	88	100	92	96	88	94
Facet (quinclorac) 0.42 kg ai/ha	95	98	95	100	93	99	88	95
Newpath (imazethapyr) 0.035 kg ai/ha fb* Newpath (imazethapyr) 0.035 kg ai/ha	100	94	100	100	100	100	100	100
LSD (p=0.05)	8		9		9		8	

*fb – followed by

aggregates, particularly the larger aggregates, are considered to be of better quality. Measurements on the abundance of water stable aggregates in conventional-and no-till rice systems were carried out at the University of Arkansas Rice Research and Extension Center. Comparisons were made on seven rotations that have been managed as conventional and no-till for 5 years. Samples were collected at 0-4" and 4-8" depths and processed to determine the percentage of water stable aggregates > 4.0mm, 2.0-4.0mm, 1.0-2.0mm, 0.50-1.0mm, 0.25-0.50mm respectively. When the percentages of each aggregate size were pooled and compared across treatments, it was found that there were no differences in the upper (0-4") and lower (4-8") soil depth percentages in the conventional-till treatments while there was a significant difference in the upper and lower soil depths in the no-till rotations. Total water stable aggregates in the lower soil depth of no-till plots were similar to the conventional-till values while those in the upper soil depth (0-4") were twice the value of the lower depth. This indicates that total percent water stable aggregates increased in the top 4" of the soil profile in the no-till plots, while there were no changes in the 4-8" depth of the no-till and at any depth in the conventional-till plots. Percentage of water stable aggregates in any soil will not increase rapidly, thus we did not expect to see changes in the lower soil depth after only 5 years. All values in the conventional-till plots were approximately half those from no-till plots. We also did not expect differences in the soil depth measurements in the conventional-till plots because the soil layers are mixed each year with tillage operations. In all cases soil quality, as measured by percentage water stable aggregates, was improved in the no-till plots.

The rotations that were compared had rice either every year, every second year, or every third year. Highest water stable aggregate values were in the rotations that had rice every year while the lowest values were from rotations that contained rice every third year. These results suggest that rice, grown in a no-till setting and where stubble is left on the field, has the potential to significantly increase the percentage of soil water stable aggregates and thus soil quality.

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Cuba continued...

Left to right: Dwight Roberts, CEO, U.S. Rice Producers Association; Pedro Alvarez, President of Alimport, Cuba's food import agency; Arturo Ledesma, Bayer Crop Science-Mexico; and Bob Papanos, owner of the Rice Trader journal. The photo was taken at the 1st Rice Congress of the Americas 2007, held in Cancun May 16-17.

ter of the Republic of Cuba in February of that year.

In October 1959, Castro openly declared himself to be friendly towards Communism, though he did not yet claim to be a Communist himself, while the liberal and other anti-Communist elements of the government were purged. Many who had initially supported the revolution fled the country to join the growing exile community in Miami. In March 1960, the first aid agreements were signed with the Soviet Union. In the context of the Cold War, the U.S. saw the establishment of a Soviet base of influence in the Americas as a threat and plans were approved to remove Castro from power.

In late 1960, a trade embargo was imposed, which strengthened Castro's ties with the Soviet Union. At the same time, the U.S. administration authorized plans for an invasion of Cuba by Florida-based exiles, taking advantage of anti-Castro uprisings, which were repressed. The result was the disastrous Bay of Pigs Invasion of April 1961. President John Kennedy withdrew promised U.S. air support for the invading force at the last minute and the populist anti-Castro uprising failed to materialize. Kennedy refused to provide direct American military intervention and the invasion force was routed. This prompted Castro to declare Cuba a socialist republic, and himself a Marxist-Leninist in May of 1961.

One immediate strategic result of the Cuban-Soviet alliance was the decision to place Soviet intermediate range ballistic missiles in Cuba, which precipitated the Cuban missile crisis of 1962, during which President John F. Kennedy took steps that could have lead to nuclear war with the Soviet Union with unless the missiles were withdrawn. The idea to place missiles in Cuba was brought up either by Castro or Khrushchev, but agreed to by USSR with the justification that the U.S. had their nuclear missiles placed in Turkey and elsewhere in Middle East, thus directly threatening USSR safety. Eventually the Soviets backed down, and made an agreement with Kennedy - all the missiles to be withdrawn from Cuba, but at the same time from Turkey and elsewhere in Middle East.

In the aftermath of this, there was a resumption of contacts between the U.S. and Castro, resulting in the release of the anti-Castro fighters captured at the Bay of Pigs in exchange for a package of aid. But during 1963, relations deteriorated again as Castro moved Cuba towards a fully-fledged Communist system modeled on the Soviet Union. The U.S. imposed a complete diplomatic and commercial embargo on Cuba.

The limited trade with Cuba now permitted is due to the U.S. Trade Sanctions Reform and Export Enhancement Act of 2000. But in February 2005, the Bush administration tightened its interpretation of the law, requiring Cuba to pay cash for purchases before they leave U.S. ports. In addition, the Cubans cannot deal directly with U.S. banks and must work through third-party banks to pay for their goods.

Another barrier is the travel restrictions that are imposed. Businesses who want to visit Cuba to establish trade relations must acquire special permits from the U.S. Treasury's Office of Foreign Assets Control. Kirby Jones is the president of the U.S.-Cuba Trade Association (see side bar), and he said these permits are often denied with no reason given, and phone calls or letters can go unanswered for months.

Since Cuba has over 11 million people, and import much of their food, the agricultural community has been quite vocal and proactive in urging Congress to pass legislation that will open the doors for free trade. Since January, several bills have been introduced that

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would achieve this goal. The following summarizes the proposed legislation:

1. Free Trade With Cuba Act (Introduced in House)[H.R.624.IH]

It would amend the Foreign Assistance Act of 1961 to repeal the embargo on trade with Cuba. The act would prohibit the President, with respect to Cuba, of certain authorities conferred by the Trading With the Enemy Act of 1977, as a result of a specified national emergency. In addition, the act directs that any prohibition on exports to Cuba under the Export Administration Act of 1979 shall cease to be effective. It would authorize the President to impose export controls with respect to Cuba, and exercise certain authorities under the International Emergency Economic Powers Act on account of an unusual and extraordinary threat to U.S. national security. It would repeal various acts from the past several years that further place restrictions on trade with Cuba.

Further, HR624 would amend the Trade Sanctions Reform and Export Enhancement Act of 2000 to remove Cuba from the list of state sponsors of terrorism subject to agricultural and medical export restrictions. It would also amend the Internal Revenue Code to terminate the denial of foreign tax credit to Cuba.

To facilitate interaction and commerce, the act would authorize common carriers to install and repair telecommunications equipment and facilities in Cuba, and provide telecommunications services between the two countries. In addition, there would be no regulation or banning of travel to and from Cuba by U.S. citizens or residents. It would also direct the U.S. Postal Service to provide mail service to and from Cuba.

If passed, HR624 would urge the President to take all necessary steps to conduct negotiations with the Government of Cuba to settle claims of U.S. nationals against Cuba for the taking of property, and secure protection of internationally recognized human rights.

2. Cuban-American Family Rights Restoration Act (Introduced in House)[H.R.757.IH]

This act would prohibit the President from regulating travel to or from Cuba by any U.S. person; or limit transactions (baggage, living expenses, personal use goods or services, normal banking transactions) incident to travel for the purpose of visiting a close relative who is a national of Cuba.

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The U.S.-Cuba Trade Association

http://www.uscuba.org/

The U.S.-Cuba Trade Association (USCTA) is a 501c(6) membership-based non-profit organization based in Washington, D.C., which works on behalf of its U.S. business members to protect the current trade and to expand and increase the potential for future business between the United States and Cuba. It serves the U.S. business community with reliable and accurate information on all issues surrounding trade and business between the U.S. and Cuba and promotes the normalization of commercial relations between the U.S. and Cuba. The Association also helps companies understand and know how to undertake business in Cuba.

USCTA has formed strategic partnerships with two of the most important national business organizations: National Foreign Trade Council and USA*Engage. Both organizations have offered not only to help and support the formation of USCTA but also to facilitate its ongoing activities.

NFTC is a membership organization of 300 member companies throughout the United States and has been the business leader in promoting free trade since it was founded in 1914. USA*Engage, a membership coalition of 650 companies and associations, has been the leading business voice advocating against all policies of unilateral sanctions and for engagement.

NFTC and USA*Engage will initially help arrange jointly sponsored events. But most importantly, both NFTC and USA*Engage will provide their extensive professional lobbying personnel and experience to work on behalf of Congressional initiatives of direct concern to companies which trade with Cuba. USCTA will be able to call on these lobbyists as well as coordinate and work closely with both these organizations on efforts to protect the current business with Cuba from interference and to support and realize new measures to ease the procedures and build new business opportunities.

Under the direction of its Board of Directors, USCTA operates with total transparency and all its deliberations and board actions will be available to any member for inspection upon request in order to avoid even the appearance of any conflict of interest or other inadvertent transgressions. The Association conducts its activities on behalf of its members in total compliance with all U.S. government regulations governing bi-lateral relations with Cuba and does not and will not represent or work on behalf of the government of Cuba or any other outside entity.

Cuba continued...

3. Cuba Reconciliation Act (Introduced in House)[H.R.217.IH]

This act would amend the Foreign Assistance Act of 1961 (including other specified laws) to repeal the embargo placed upon all trade with Cuba and amend the Internal Revenue Code to declare the denial of foreign tax credit inapplicable to Cuba.

Sugarcane is one of Cuba's main cash crops.

Further it would provide for permits for the installation and maintenance of telecommunications equipment and facilities in Cuba, including telecommunications services between the United States and Cuba. It would also require the U.S. Postal Service to provide direct mail service to and from Cuba.

4. Export Freedom to Cuba Act of 2007 (Introduced in House)[H.R.654.IH]

This act is almost identical to HR624 in that it prohibits the President from regulating or prohibiting travel to or from Cuba by U.S. citizens or legal residents, or any of the transactions ordinarily incident to such travel relating to accompanied personal baggage, payment of living expenses and the acquisition of personal-use goods or services, travel arrangements, nonscheduled air, sea, or land voyage transactions or normal banking transactions.

HR 654 now has 101 sponsors. A full list can be seen by visiting the following: http://thomas.loc.gov/cgi-bin/bdquery/z?d110:HR00654:@@@P The companion bill in the Senate, S 721 has 20 co-sponsors: http://thomas.loc.gov/cgi-bin/bdquery/z?d110:SN00721:@@@P

5. Agricultural Export Facilitation Act of 2007 (Introduced in House) [H.R.1026]

This act would amend the Trade Sanctions Reform and Export Enhancement Act of 2000 (TSREEA of 2000) to require the Secretary of the Treasury to authorize, under a general license, certain travel-related transactions for travel to, from, or within Cuba in connection with sales and marketing activities, including organization and participation in product exhibitions and sea or air transportation of products. H.R.1026 would authorize a consular official to issue a temporary tourist/business visa for a Cuban national (who is not otherwise inadmissible) whose itinerary documents an intent to conduct activities, including phytosanitary inspections, related to purchasing U.S. agricultural goods under the provisions of TSREEA of 2000. It would also prohibit the President from restricting direct transfers from a Cuban financial institution to a U.S. financial institution executed in payment for a product authorized for sale under TSREEA of 2000. In the House, HR 1026, has 19 cosponsors, to view them go to http://thomas.loc.gov/cgi-bin/bdquery/z?d110:HR01026:@@@P.

All the aforementioned bills have been referred to the Subcommittee on Domestic and International Monetary Policy, Trade, and Technology.

It is interesting to note that Rep Lincoln Diaz-Balart from Florida, where there is a large Cuban-American community, has been quoted as saying that he does not have the votes to stop these bills from passing. This correlates with a survey conducted by Florida International University that revealed the division among Cuban-Americans regarding U.S. policy towards Cuba. Just over half, 51.1%, favor direct U.S. military action, with 48.9% being opposed. With regard to trade and travel, 34.1% would like to see it expanded, 26.2% think it should be kept the same, and 39.6% think it should be stopped.

Further discourse on this topic includes International Trade Commission hearings, the first held on May 1, 2007. The ITC held public hearings to evaluate the impact of current regulations on the sales of agricultural products to Cuba. These hearings are a part of a report which the ITC has been asked to do by Senator Baucus. The report is to be completed by the end of June and it is expected that it will form part of the material for hearings that Senator Baucus is expected to hold later this Summer or early Fall. Copies of some of the testimonies can be found at the ITC website at: http://www.usitc.gov/ext_relations/spotlight/cuba_testimony.htm

And finally, Alimport, Cuba's food import agency,

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Using Phytotoxins to Identify Sheath Blight

Sheath blight is caused by the fungal pathogen *Rhizoctonia solani* and is one of the most important diseases of Arkansas rice production. It is also one of the most difficult diseases to breed resistance for. As part of a collaborative effort between the Dale Bumpers National Rice Research Center, the University of Arkansas Rice Research and Experiment Station, and the Rice CAP we have developed a new method to screen for sheath blight resistance using the phytotoxin produced by the fungal pathogen.

Phytotoxins are well known pathogenicity and/or virulence factors among necrotrophic fungi. Necrotrophs, like *R. solani*, produce a 'toxin' that kills plant tissue in advance of infection. In many cases, the 'toxin' is actually a signaling molecule that triggers programmed cell death in the host plant. Therefore, the 'toxin' is basically a signaling molecule that triggers innate cell death mechanisms that exist in host plants.

Sheath Blight symptoms:
A bleached lesion where the fungus has macerated the leaf sheath, with a brown necrotic margin at the leading edge of fungal infection. Toxin infiltration into rice leaves duplicates the necrosis from disease progress.

Phytotoxins have been described in *R. solani*, and are present in sheath blight infected rice tissue. However, little work has been done to describe the toxin or develop methods to screen for sheath blight resistance in rice. The purpose of our research was to determine if the toxin could be used in place of traditional disease assays. These traditional assays are laborious and quite variable, being influenced highly by environmental conditions.

The primary limitation to any analysis of sheath blight resistance has been accurate disease ranking. The disease is highly influenced by unrelated plant traits (such as plant height) and the environment. By using the purified toxin in place of the pathogen, all confounding disease factors are circumvented, and we can reproduce disease symptoms in a fast and accurate manner.

We have been able to demonstrate that sensitivity to the toxin is positively correlated with disease susceptibility. This is an expected result for a virulence factor. The *R. solani* phytotoxin is a virulence factor, where the fungus can cause disease without the toxin, but symptoms are more severe in toxin sensitive germplasm. Therefore, we believe the toxin is an integral component of the host-parasite interaction.

Using the new methods, and a precise phenotype, we have been able to show that two genes regulate toxin sensitivity in rice. Furthermore, these techniques are allowing us to take steps toward map-based cloning of the genes, and development of markers for the breeding community. This research focuses on one component of the overall pathosystem, but the precision will allow us to make great strides toward understanding the genetic basis of resistance to this disease. *

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Texas Rice Improvement Association Update For 2007 Crop Year

T.R.I.A.
FOUNDATION SEED

Mike Doguet, President of TRIA, with Julio Castillo, Farm Seed Manager for the Association, checking on weed pressure in a field of organic Sierra.

Texas Rice Improvement Association (TRIA) has been producing foundation seed at the Beaumont Rice Experiment Center since 1941, but did not get their State Charter until 1943. TRIA officially became a voluntary, non-profit association. The purpose of TRIA was to produce and distribute seed of new varieties and to give financial support to experiments dealing with rice improvement. At this time, TRIA owns 475 acres at the Beaumont Center and has provided funding for a number of improvements to the Center since its inception, including the current USDA administration building, rice quality lab, two field labs, cold storage facilities, the implement shed, storage barn, foundation seed managers resident on the Center, and much of the seed processing plant. The current officers of TRIA are Mike Doguet-President and Jack Bauer-Vice President. There are 17 members on the TRIA Board of Directors.

Foundation Seed Varieties	Acres	Planted	Rate Per Lbs/Ac
Della	2	4/22/07	65
Jasmine	4.1	4/21/07	65
Hildago	2	4/22/07	92
Sabine	2	4/22/07	65
Carolina Gold	4.1	4/21/07	65
Cypress	2	4/22/07	65
Presidio	25.6	3/23/07	50
Organic Production			
Carolina Gold	12.5	5/3/07	120
IAC 600	4.5	5/7/07	100
Sierra (Certified)	50	5/14/07	120
Commercial Production			
Sierra (Registered)	62	3/23/07	48
RiceTec Demo (Conv)	27	4/24/07	32
RiceTec Clearfield Demo	22	3/28/07	27

Brenda Setliff , a TAES employee carrying the title of Business Coordinator I, serves as Secretary-Treasurer for TRIA. The current Foundation Seed Manager is Julio Castillo, who was recommended to TRIA with very high regards. Julio began working as the Foundation Seed Manager in a half time capacity in January, 2007, and is very determined to make this years crop the best ever. Due to reduction in rice acreage, TRIA has made some changes in their policy of producing only foundation seed. TRIA does not receive grant money or contributions from any organizations, so the board had to diversify its program to include commercial production and sales. TRIA also requires a contract to produce seed, so that the association does not produce a variety that may not sell.

Julio reported that as of May 17, 2007 everything is in the ground and is looking very good at this point. If you are interested in touring TRIA's production fields or any of the production fields at the A & M Center at Beaumont you are encouraged to participate in the Center Rice Field Day on July 12, 2007. TRIA has always been commented to improving rice production and is dedicated to remaining a viable part of the rice industry. *

Article by Brenda Setliff and Julio Castillo.

Texas A&M Biofuel Initiative

The U.S. has entered the "era of the bio-economy," said U.S. Department of Agriculture Undersecretary Gale Buchanan. "This could have the most important impact on agriculture in 150 years. To fully meet the nation's needs for sustainable resources, we've got to look at all types of feedstock," said Buchanan, who recently visited the Texas A&M University System campus at College Station on May 1.

Buchanan, along with Texas Commissioner of Agriculture Todd Staples, agribusiness leaders and media representatives, were at the campus to tour the Texas A&M Agriculture effort in biofuel research. The Texas A&M biofuel research effort goes beyond corn for ethanol, a multi-disciplinary effort that includes crops bred specifically for high-tonnage biomass for biofuel and generating electricity, engineering research into processing the biomass, and cropping systems that would allow farmers to not just grow the crops, but grow them profitably. More information on the Experiment Station's biofuel initiative can be found at http://agresearch.tamu.edu/BioenergyInitiatives.htm.

At the Texas A&M Agricultural Research and Extension Center at Beaumont, scientists are developing multi-crop systems for biomass production that takes advantage of the long growing season and ample rainfall along the Texas upper gulf coast and provide biomass throughout the year.

The Center is evaluating both energy cane (a high biomass, low sugar, variant of sugarcane) and high-cellulose sorghums, and are developing procedures to allow earlier planting of forage sorghums so that we can get an extra cut during the season. The Beaumont Center has also initiated and participated in multiple proposals to improve the sustainable and profitable production of these and other biomass crops.

Recently, the Beaumont Center has been active as part of a team providing information about the many advantages of the Southeast Texas area for bioenergy production to the Celunol corporation, a company considering the area as a site for the first commercial cellulose-to-ethanol facility in the US. Other members of the team include prominent producers, Mike Doguet and Bill Dishman, Jr., and the Southeast Texas BioEnergy Alliance, which represents a range of interested entities in Southeast Texas. ✻

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No-Till continued...

The carbon and nitrogen content (%) of each aggregate class was also determined. This adds a 'quality' measurement to the 'quantity' measurement of the abundance of water stable aggregates. We found that, regardless of tillage treatment, the highest percent of carbon or nitrogen was in the 1.0-2.0mm aggregate size class. Differences between tillage treatments in percent carbon and nitrogen were greatest for the larger aggregates and nearly the same for the smaller aggregates. These results indicate that quality as measured by carbon and nitrogen content will be significantly improved with higher percentages of larger aggregates.

Of the seven rotations measured, continuous rice had the highest carbon and nitrogen values for the largest aggregate class. While much smaller in terms of abundance, the larger aggregates appear to be of better quality (i.e. have better tilth), particularly in the no-till systems. This, combined with a relatively high percentage of larger sized aggregates in the rotations where rice appears more frequently, suggest rice is a good crop to increase soil quality, and that the more frequent it is found in rotations that are no-till, the better the soil quality.

Soil resistance: Soil resistance is a physical measurement that can give an indication of how easily a plant penetrates the soil. Our team compared soil profiles in no-till and conventional-till rotations to a depth of 16" at 2" intervals. For all rotations there was a decrease in resistance in the 4-14" depths in the no-till plots, compared to the conventional-till plots. This decrease in soil resistance was associated with increased soil moisture.

Some of the lowest resistance recordings were with the continuous rice, corn-rice, and soybean-rice rotations. The relationship of increased soil moisture with decreased soil resistance support the finding that no-till rice often does not require flushing.

In the last two years the no-till rice grain yields were greater than the conventional-till yields. This is due, in part, to improved soil physical and chemical properties in the no-till systems, and a better understanding of how to manage no-till rice production. Our team is well past the 'plow' mindset, and can show the benefits of making the change to no-till. ✻

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Cuba continued...

hosted a trade expo in Havana May 28-31. Alimport's president, Pedro Alvarez Borrego, has stated that their intent is to sign contracts for import totaling in the millions, and those that attend are most likely to get Cuba's business.

Five years ago, when Congress passed the TRADE Sanctions Reform and Export Enhancement Act (TSREEA), rice was the first U.S. commodity to enter the Cuban market. According to a report by the USA Rice Federation, potential rice sales to Cuba conservatively equate to 4,722 U.S. jobs.

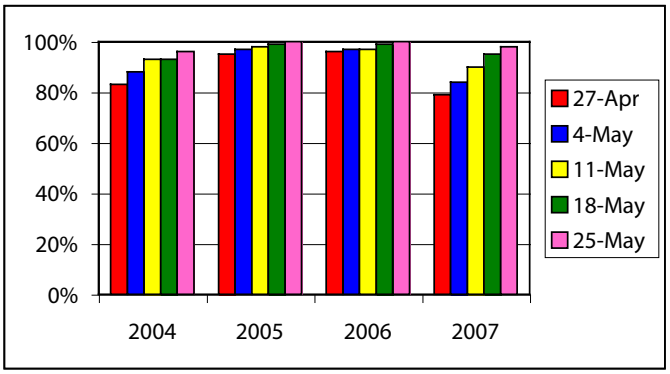
From a monetary standpoint, the USDA Foreign Agriculture Service Export Trade Database recorded $26,000 in rice sales to Cuba in 2000. After TSREEA was enacted, sales jumped to $6.2 M in 2002, and further jumped to $39.2 M in 2005.

According to Thomas Wynn, Director of Market Development for the U.S. Rice Producers Association, with an open market, Cuba could be a 700,000 metric ton market annually. What that mean in dollars depends on the world market price for rice at that time. Another question is how an open market to Cuba would increase rice acreage. Most experts agree it would certainly increase. To produce enough rice to address their increased demand would require ca. 220,000 acres of land. However, depending on the rate that the biofuel industry moves forward, many growers may opt to put acreage in corn and soybeans, which would reduce rice supplies and increase market prices. But in 'rice country', an open market to Cuba would certainly be a plus. *

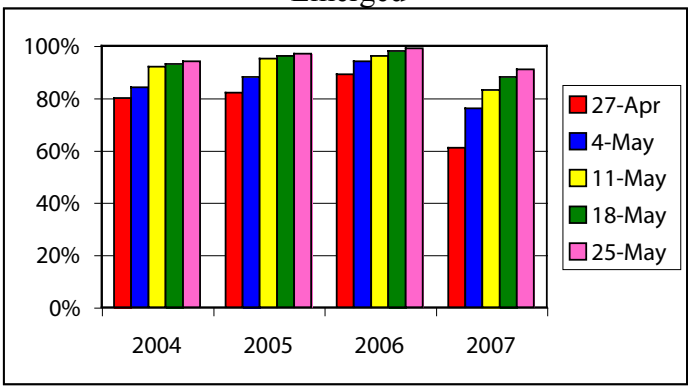
Article by Jay Cockrell and Dwight Roberts.

Rice Crop Update

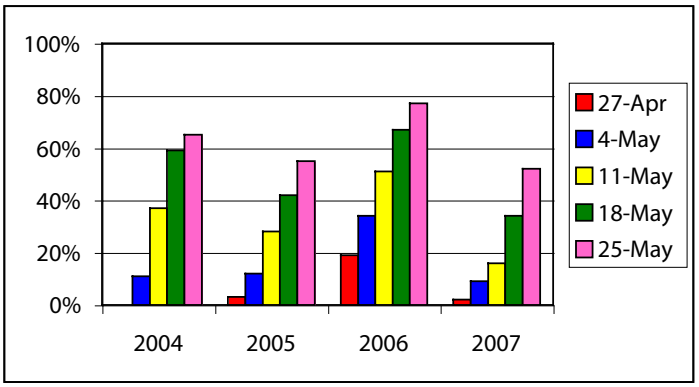
Planted



Emerged



Flooded



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Access back issues of *Texas Rice* at
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Texas Rice is published 9 times a year by The Texas A&M University System Research and Extension Center at Beaumont. Interviews, writing and layout by Jay Cockrell. Editing by Ted Wilson, Jay Cockrell and Brandy Morace, with additional support by Jim Medley. Information is taken from sources believed to be reliable, but we cannot guarantee accuracy or completeness. Suggestions, story ideas and comments are encouraged.

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